

**REMARKS**

**I. Introduction**

Claims 1-18 are pending in the application. Claims 9-14 and 16-18 were withdrawn following a restriction requirement. Claims 1-8 and 15 were rejected. By this response, claims 3 and 15 have been amended. Claim 3 has been amended to correct a grammatical error. Support for the amendment to claim 15 is found, for example, in Figs. 4, 5 and 17 as well as specification pages 15-18.

Reconsideration of this application as amended and allowance of all pending claims are hereby respectfully requested.

Claim 15 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Claims 1, 2, 7, 8 and 15 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Skala et al., U.S. 6,911,277. Claims 3-6 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Skala et al..

**II. Claim Rejections under 35 U.S.C. §112, second paragraph**

Claim 15 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. Applicants respectfully submit that the amendment to claim 15 obviates this rejection. In particular, the claim has been amended to recite in pertinent part “each of the plurality of MEAs is positioned between a pair of the separators.” As such, it is requested that the rejection be withdrawn.

**III. Claim Rejections under 35 U.S.C. §102(e)**

The Examiner rejected claims 1, 2, 7, 8, and 15 under 35 U.S.C. §102(e) as allegedly being anticipated by Skala. Applicants respectively traverse this rejection.

Claim 1 recites:

“A fuel cell stack comprising: at least one cell A, which comprises a first and second separator disposed between and contacting opposing surfaces of an MEA, wherein the first separator has an inlet manifold to direct gas to and across one surface of the MEA and an outlet manifold linked to the inlet manifold to direct gas away from the one surface of the MEA; and

at least one cell B, which comprises a first and second separator disposed between and contacting opposing surfaces of an MEA, wherein the first separator has a first and second inlet manifold to direct gas to and across one surface of the MEA and a first and second outlet manifold linked to the first and second inlet manifolds, respectively, to direct gas away from the one surface of the MEA, wherein the outlet of the first separator of cell A is linked to the second inlet manifold of the first separator of cell B.”

Anticipation under 35 U.S.C. § 102 requires that “each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”

*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed Cir. 1987). At a minimum, the cited prior art does not disclose (expressly or inherently) that “the outlet of the first separator of cell A is **linked** to the **second** inlet manifold of the first separator of cell B.” In this structural configuration, the present disclosure can achieve a change of path among a plurality of cells. In other words, a relationship in which upper halves of the (2n-1)th (assigned an odd number as the ordinal number) cells and the (2n)th (assigned an even number as the ordinal number) cells can be connected in parallel with each other, similarly the lower halves of the cells, as shown in Fig. 3 and the corresponding description, can be connected in parallel with one another.

In contrast, Skala fails to disclose such a structural configuration of **connected or linked** cells described above. Skala merely discloses sector valve members 40 and 42 in which a change of path is limited to within a discrete cell in the stack, as shown in Figs. 2-5, **not between a plurality of linked cells**.

The configuration as recited in claim 1, can achieve the effect of providing a reliable fuel cell that addresses flooding and low-load performance problems while maintaining a steady gas flow rate during low load operation, (*see for example* page 4 paragraph 15 of specification).

As such, Skala fails to anticipate claim 1 and therefore claim 1 is allowable.

Furthermore, claims 2-8 depend from and further limit independent claim 1 and therefore are also allowable.

Moreover, claim 15 recites:

A fuel cell stack comprising:  
a plurality of separators,  
a plurality of MEAs,  
means for supplying gas to the plurality of separators *parallelly* during a first power mode and *serially* during a second power mode, wherein  
each of the plurality of MEAs is positioned between a pair of the separators, and  
each of the separators is positioned so that one separator positioned between a pair of the MEAs is shared with the pair of MEAs respectively corresponding to two cells, and another separator positioned between another pair of the MEAs forms one cell with the pair of the MEAs.

As discussed above, in reference to claim 1, at a minimum, Skala does not disclose (expressly or inherently) “a means for supplying gas to the plurality of separators *parallelly* during a first power mode and *serially* during a second power mode.”

In contrast, Skala merely teaches different paths *within a discrete cell* in the stack, as shown in Figs. 2-5, not a variation of gas paths *between cells*.

Accordingly claim 15 is allowable over the prior art.

Furthermore, claim 6 recites in pertinent part: “wherein the controller operates cells A and B in parallel during a first power mode by opening valves 1, 2, 8, 3, 4 and 7 and closing the remaining valves; and wherein the controller operates cells A and B in series during a second power mode by opening valves 2, 5, 4, 6 and closing valves the remaining valves.”

**IV. Claim Rejections under 35 U.S.C. §103(a)**

Claims 3-6 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Skala. Applicants respectfully disagree.

As an initial matter, claims 3-6 depend from independent claim 1, and as discussed above Skala fails to teach all of the claim limitations of claim 1.

Further dependent claims 3-6 add novel and non-obvious features to the configuration and are therefore patentable based on their own merits.

For example claims 3 recites in pertinent part: “wherein the controller operates cells A and B in parallel during a first power mode by opening valves 1, 2, 8, 3, 4 and 7 and closing the remaining valves; and wherein the controller operates cells A and B in series during a second power mode by opening valves 2, 5, 4, 6 and closing valves the remaining valves.”

Claim 6 recites in pertinent part: “wherein the controller operates cells A and B in parallel during a first power mode by opening valves 1, 2, 8, 3, 4 and 7 and closing the remaining valves; and wherein the controller operates cells A and B in series during a second power mode by opening valves 2, 5, 4, 6 and closing valves the remaining valves.”

The Examiner concedes that Skala fails to disclose the valve manifold structure of claim 3, however, the Examiner alleges that it would have been obvious to modify Skala in to meet the limitations of claim 3.

As discussed on page 20, paragraph 97 of the specification, one aspect of the present invention is directed to flooding and low-load performance problems while maintaining a steady gas flow rate during low load operation.

In contrast, Skala does not teach or suggest addressing these problems. That is, the primary purposed of Skala is directed to just “maintain a reasonable pressure drop while providing sufficient velocities and reactant concentrations at each cell for varying throughputs,” (col. 1, lines 56-60). As such, Skala does not contemplate the problem of flooding, and therefore it would not be obvious to one having ordinary skill in the art to modify Skala in such a way as to meet the claims limitations of the instant disclosure.

Moreover, in order to establish a *prima facie* obviousness rejection under 35 U.S.C. § 103(a), all the claim limitations must be taught or suggested by the prior art. *In re Rokya*, 490 F. 2d 981, 180 USPQ 580 (CCPA 1974). Further, “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F. 3d 977, 988 (Fed. Cir. 2006).

Thus, there is no articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

Accordingly claims 3-6 are allowable.

**V. Conclusion**

For all of the foregoing reasons discussed above, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicant's attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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